TABLES

TABLE 1

SOLID WASTE MANAGEMENT UNIT CHARACTERIZATION
PPG INC.
NATRIUM PLANT
NEW MARTINSVILLE, WEST VIRGINIA

SOLID WASTE MANAGEMENT UNIT	SIZE (ft)	VOLUME ($1,000 ft^3$)	DEPTH (ft)	WASTE DESCRIPTION[a]	NOTES[a]
Marshall Plant Pond	275 x 220	485	~8	• Ferric chloride ($FeCL_4$) 2,760,000 pounds • Chlorinated benzenes and tar • Metals (Fe, Mn, Mg, Zn Cd, Cu, V, Cr) • Tracifier waste - Halogenated aliphatics - Inorganic salts - CCl_4	• Walls and bottom constructed of local clay • Received waste from - Chlor-alkali plant - Chlorinated benzene plant - Titanium tetrochloride plant • Closure in 1979-80 - six to eight-inch clay - Includes concrete material under clay layer • Ponds in area of silty clay soil
Inorganics Waste Pond	225 x 140	190	~6	• $BaCO_3$ • $BaSO_4$ • Fe_2O_3 • SiO_2	• Walls and bottom of earthern material • Received wastewater and sludge from barium oxide plant • Closure in 1980, six to eight-inch clay and soil • Located near ground water divide produced by pumping (1985 data) • Pond in area of suspected fill material
Barium Waste Landfill	200 x 200	150	~4	• $BaCO_3$ • $BaSO_4$ • Fe_2O_3 • SiO_2	• Constructed of local top soil and clay • Received solid wastes from barium plant • Closure in 1980; six-inch soil cover

TABLE 1
(Continued)

SOLID WASTE MANAGEMENT UNIT	SIZE (ft)	VOLUME ($1,000\ ft^3$)	DEPTH (ft)	WASTE DESCRIPTION[a]	NOTES[a]
BHC Waste Pile	75 x 150	50	~20	• Benzene hexachloride isomers (a, b, q, BHC) • Chlorinated organic solvents (trace)	• Open waste pile on soil or fill • Received waste product from BHC plant • Material shipped off site in 1977 • No formal closure
Fly Ash Landfill	300 x 1,800	4,725	~11	• $BaSO_4$ • $BaCO_3$ • Fe_2O_3 • SiO_2	• Constructed with clay bottom and dikes • Received: - Bottom ash prior to 1975 - Fly and bottom ash since 1975 • Progressive closure as areas become filled • Periodic barium waste deposited in southern tracts • Closure consists of six-inch soil and grass • Landfill constructed in area of clay approximately 20 feet thick • Scrap metal may be present
Sanitary Landfill	1,100 x 500	5,500	-	• General trash and rubbish • Demolition debris • Construction refuse	• Constructed in sandy-clay loam material • Three separate cells; two closed • Class III nonchemical landfill
Mercury Wastewater Tanks	-	-	-	• Mercuric sulfide • Mercuric chloride	• Consists of three tanks and treatment system • Treatment results in insoluble ground mercuric sulfide which is disposed off site • Mercury has been detected in nearby monitoring wells

[a]Information based on 1985 and 1986 submittals by PPG to U.S. EPA.

TABLE 2

MONITORING WELL AND GROUND WATER ELEVATIONS
PPG, INC.
NATRIUM CHEMICAL PLANT
NEW MARTINSVILLE, WEST VIRGINIA

WELL NO.	ELEVATION OF TOP OF PVC (ft above MSL)	DEPTH TO WATER FROM TOP OF PVC (ft) (9-28-81)	DEPTH TO WATER FROM TOP OF PVC (ft) (4-13-89)	WATER TABLE ELEVATION (9-28-81) (ft above MSL)	WATER TABLE ELEVATION (4-13-89) (ft above MSL)
MW-1	690.99	36.19	37.25	654.80	653.74
MW-2	687.44	77.17	72.96	610.27	614.48
MW-3	640.30	19.92	NA	620.38	NA
4	637.16	17.53	18.42	619.63	618.74
MW-5	629.57	7.43	4.92	622.14	624.65
MW-6	646.89	36.16	33.71	610.73	613.18
MW-7	654.58	45.91	40.96	608.67	613.62
MW-8	657.86	48.85	44.04	609.01	613.82
MW-9	668.46	58.97	54.00	609.49	614.46
MW-10	673.59	63.71	58.88	609.85	614.71
MW-11	671.56	61.12	56.67	610.44	614.89
MW-12	673.02	62.08	57.92	610.94	615.10
MW-13	667.56	55.28	51.42	612.28	616.14
MW-14	649.10	36.00	32.71	613.10	616.39
15	646.01	33.75	28.62	612.26	617.39
MW-16	640.18	27.75	24.20	612.43	615.98
MW-17	641.85	29.66	25.50	612.19	616.35
MW-18	641.87	28.36	25.23	613.51	616.64
MW-19	667.92	56.36	52.29	611.56	615.63
MW-30	657.42	NA	44.04	NA	613.38
MW-31	674.28	NA	60.54	NA	613.74
MW-32	658.86	NA	45.67	NA	613.19
MW-33	667.61	NA	54.08	NA	613.53
Ohio River	NA	NA	NA	624.00 (est.)	620.10

TABLE 3

PRODUCTION WELL
PUMPING RATES
APRIL 13, 1989
PPG, INC.
NATRIUM CHEMICAL PLANT
NEW MARTINSVILLE, WEST VIRGINIA

WELL NO.	PUMPING RATE (gpm)
5	230
18	310
19	50
28	110
33	?
38	400
41	110
43	200
50	220
51	225
53	220
55	450
57	375
58	180
59	440
NH_3-1	400
NH_3-2	300
NH_3-3	200

TABLE 4
WATER AND SOIL SAMPLE SUMMARY FOR EACH SWMU

SWMU	NO. OF SAMPLES		TOTAL
	WATER	SOIL	
Marshall Plant Pond	4	-	4
Inorganics Waste Pond	3	-	3
Barium Waste Landfill	4	-	4
BHC Waste Pile	3	-	3
Fly Ash Landfill	5	-	5
Sanitary Landfill	2	-	2
Mercury Wastewater Tanks	4	9	13
TOTALS	25	9	34

Note: For a list of specific analytical parameters for each SWMU, see Table 5.

TABLE 5

U.S. EPA-REQUESTED PARAMETERS FOR GROUND WATER ANALYSIS
PPG, INC.
NATRIUM PLANT
NEW MARTINSVILLE, WEST VIRGINIA

SWMU		U.S. EPA-REQUESTED PARAMETERS
Marshall Plant Pond	Inorganics:	Cd, As, Cr,
	Organics:	Chloroform
		Methylene chloride
		Carbon tetrachloride
		Trichloroethane
		Benzene
		Trichloroethylene
		Tetrachloroethylene
		m-, p-, and o-dichlorobenzene
		Trichlorobenzene
		Benz(a)anthracene
		Benzo(b)fluoranthene
		Benzo(a)pyrene
		Chlorinated naphthalene
		Chlorobenzene
		Dibenz(a,h)anthracene
		7,12-Dimethylbenz(a)anthracene
		3-Methylcholanthrene
		Naphthalene
		Fluoranthene
Inorganics Waste Pond	Inorganics:	As, Ba, Cr, Fe, Pb, Hg, Se
	Organics:	Total organic carbon (TOC)
		Total organic halogen (TOX)
Barium Waste Landfill	Inorganics:	Pb, Ba
	Organics:	Total organic carbon (TOC)
		Benzene
		Carbon tetrachloride
BHC Waste Pile	Inorganics:	Pb
	Organics:	Chloroform
		Carbon tetrachloride
		trans-1,2-dichloroethylene
		Bromo dichloromethane
		Trichloroethylene
		Tetrachloroethylene
		Benzene

TABLE 5
(Continued)

SWMU	U.S. EPA-REQUESTED PARAMETERS
Fly Ash Landfill	Inorganics: Ba, Fe, Sulfate Total alkalinity pH
Sanitary Landfill	Organics: Chloroform Methylene chloride Carbon tetrachloride Trichloroethane Benzene Trichloroethylene Tetrachloroethylene m-, p-, and O-dichlorobenzene
Mercury Wastewater Tanks	Inorganics: Hg[a]

[a]Six soil samples collected from boreholes drilled for the installation of monitoring wells at this SWMU will also be analyzed for the presence of mercury.

TABLE 6
ANALYTICAL DETECTION METHODS

PARAMETER	METHOD
Ground Water	
Metals	
Arsenic	U.S. EPA 206.2
Barium	U.S. EPA 200.7
Cadmium	U.S. EPA 200.7
Lead	U.S. EPA 200.7 or 239.2
Mercury	U.S. EPA 245.1
Selenium	U.S. EPA 270.2
Total Chromium	SW846 7190
Iron	SW846 7380
Total Metal Digestion	CLP SOW 7/88
Organics	
Volatiles	SW846 8240
Semivolatiles	SW846 8270
General Chemistry	
Sulfate	SW846 9038
TOC	SW846 9060
TOX	SW846 9020
Alkalinity	U.S. EPA 310.1
Soils	
Metals	
Arsenic	SW846 7060
Mercury	SW846 7470

TABLE 7

ANALYTICAL DETECTION LIMITS

PARAMETER	DETECTION LIMIT GROUND WATER (µg/ℓ)[a]	DETECTION LIMIT SOIL (mg/kg)[b]
Arsenic	10	1
Barium	200	
Cadmium	5	
Chromium	10	
Lead	5	
Mercury	0.2	1
Selenium	5	
Benzene	5	
Carbon tetrachloride	5	
Chlorobenzene	5	
Chloroform	5	
m-dichlorobenzene	10	
p-dichlorobenzene	10	
o-dichlorobenzene	10	
Fluoranthene	10	
Methylene chloride	5	
Naphthalene	10	
Trichlorobenzene	10	
Trichloroethane	5	
Trichloroethylene	5	
Tetrachloroethylene	5	
Trans-1,2-dichloroethylene	5	
Bromo dichloromethane	5	
Benz(a)anthracene	10	
Benzo(b)fluoranthene	10	
Benzo(a)pyrene	10	
Chlorinated naphthalene	10	
Dibenz(a,h)anthracene	10	
7,12-dimethylbenz(a)anthracene	10	
3-methylcholanthrene	10	

[a] µg/ℓ = Micrograms per liter or parts per billion.

[b] mg/kg = Milligrams per kilogram or parts per million.

TABLE 8

SIGNIFICANT POTENTIAL CONTAMINANTS
ASSOCIATED WITH THE SOLID WASTE MANAGEMENT UNITS

SITE	CONTAMINANTS
Marshall Plant Waste Pond	Ferric Chloride Chlorobenzene o,m,p-Dichlorobenzene Trichlorobenzene Benzene Chloroform Carbon tetrachloride Methylene chloride Trichloroethylene Tetrachloroethylene Tetrachloroethane Vanadium Cadmium Chromium Lead
BHC Waste Pile	Benzene hexachloride isomers Lindane (gamma-benzene hexachloride) Benzene Chlorobenzene o,m,p-Dichlorobenzene Chloroform Carbon tetrachloride Perchloroethylene Trichloroethylene
Mercury Wastewater Tanks	Mercury - elemental Mercuric sulfide Mercuric chloride
Barium Waste Pond	Barium carbonate Barium sulfate
Inorganics Waste Pond	Barium carbonate Barium sulfate
Fly Ash Landfill	Barium carbonate Barium sulfate
Sanitary Landfill	Methane

TABLE 9

VOLATILE ORGANIC COMPOUNDS AND DRAEGER INDICATOR TUBES

COMPOUND	ACIGH TLV (ppm)	DRAEGER TUBE TO BE USED
Benzene	1[a]	Benzene 0.5/a
Carbon tetrachloride	5	Carbon tetrachloride 5/c
Chlorobenzene	75	Chlorobenzene 5/a
Chloroform	10	Chloroform 2/a
o-Dichlorobenzene	50	Chlorobenzene 5/a
p-Dichlorobenzene	75	Chlorobenzene 5/a
Methylene chloride	50	Methylene chloride 100/a
Tetrachloroethylene	50	Trichloroethylene 2/a
1,1,1-Trichoroethane	350	Trichloroethylene 2/a
Trichloroethylene	50	Trichloroethylene 2/a
Trichlorobenzene	5	Chlorobenzene 5/a

[a]OSHA Permissible Exposure Limit.

FIGURES

DRAWN BY	D.E.S.	CHECKED BY	JAB	DRAWING NUMBER 303409-EI
IE	5-2-89	APPROVED BY	[illegible]	5-9-89

LEGEND

- MW-8 ● EXISTING MONITORING WELLS
- MW-101 ◐ PROPOSED MONITORING WELLS
- NO.18 ○ EXISTING PUMPING WELLS

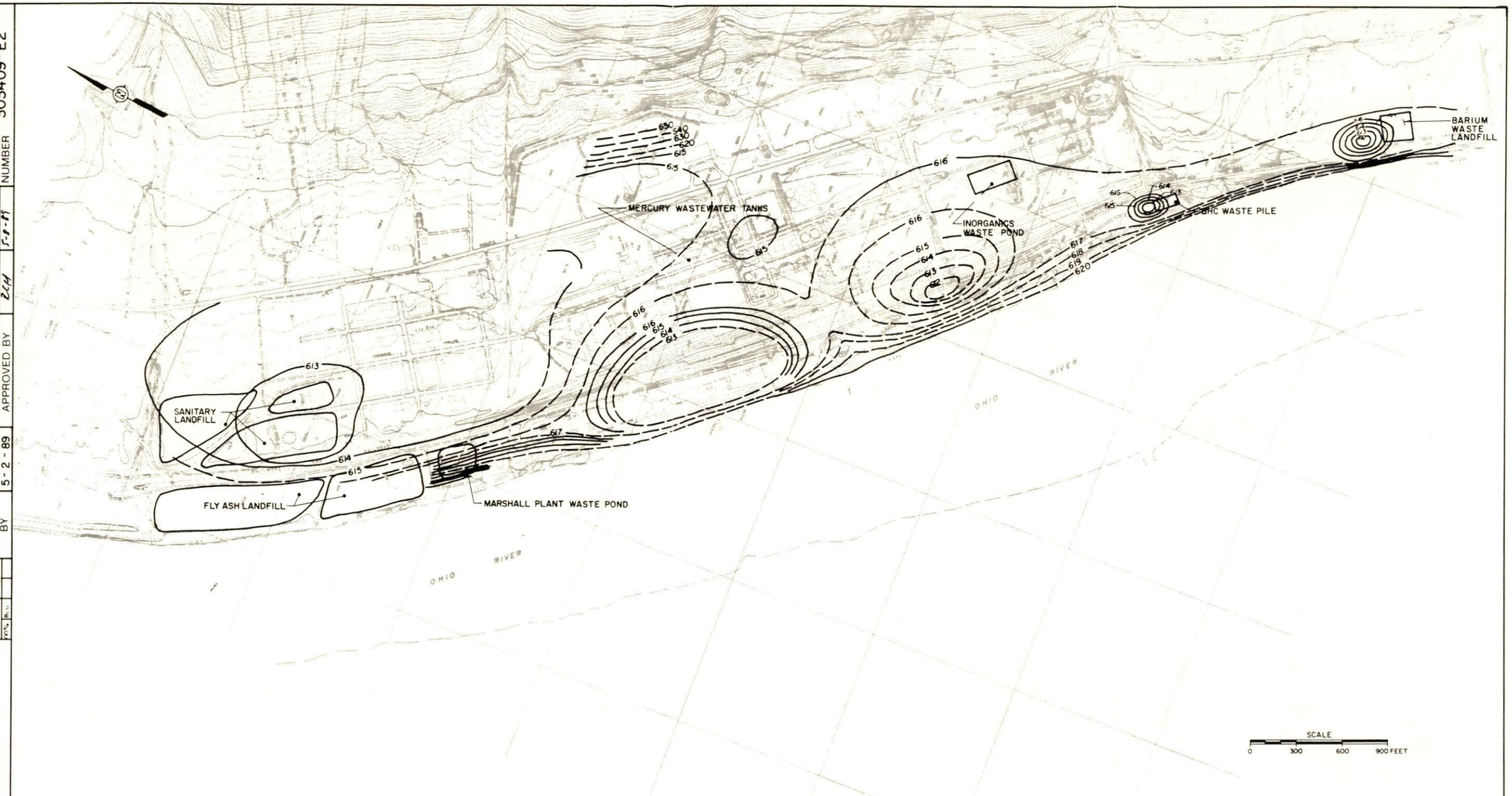
FIGURE 1

SITE MAP
PROPOSED AND EXISTING
MONITORING WELL LOCATIONS
NATRIUM CHEMICAL PLANT
NEW MARTINSVILLE, WEST VIRGINIA
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

INTERNATIONAL TECHNOLOGY CORPORATION

DRAWN BY				
D.E.S.	5-2-89	CHECKED BY	JAB	5-8-89
		APPROVED BY	ZLH	5-9-89
				DRAWING NUMBER 303409-E2



LEGEND

616 GROUND WATER ELEVATION CONTOUR

FIGURE 2

GROUND WATER CONTOUR MAP
AS DERIVED FROM APRIL 13, 1989
GROUND WATER ELEVATION DATA
NATRIUM CHEMICAL PLANT
NEW MARTINSVILLE, WEST VIRGINIA

PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

INTERNATIONAL TECHNOLOGY CORPORATION

INTERNATIONAL TECHNOLOGY CORPORATION

FIGURE 3

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER:	PROJECT NAME:	
BORING NUMBER:	COORDINATES:	DATE:
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST:	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS:		PAGE OF

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ' ( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS

NOTES:

FIGURE 4

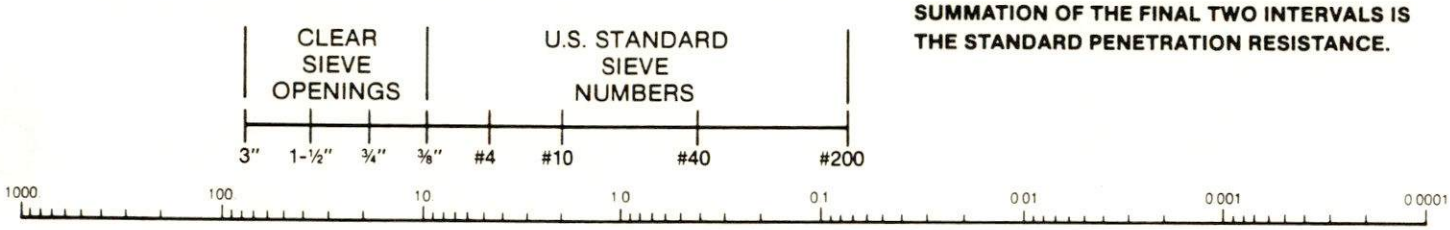
CONSISTENCY OF COHESIVE SOILS

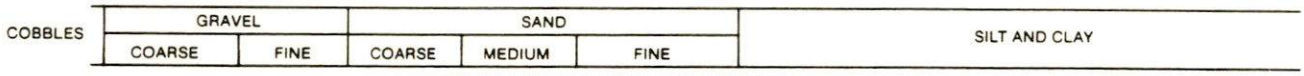
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
MEDIUM STIFF	0.50 to 1.0
STIFF	1.0 TO 2.0
VERY STIFF	2.0 TO 4.0
HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE(1)
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) **STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.**





USCS CLASSIFICATION FOR SOILS

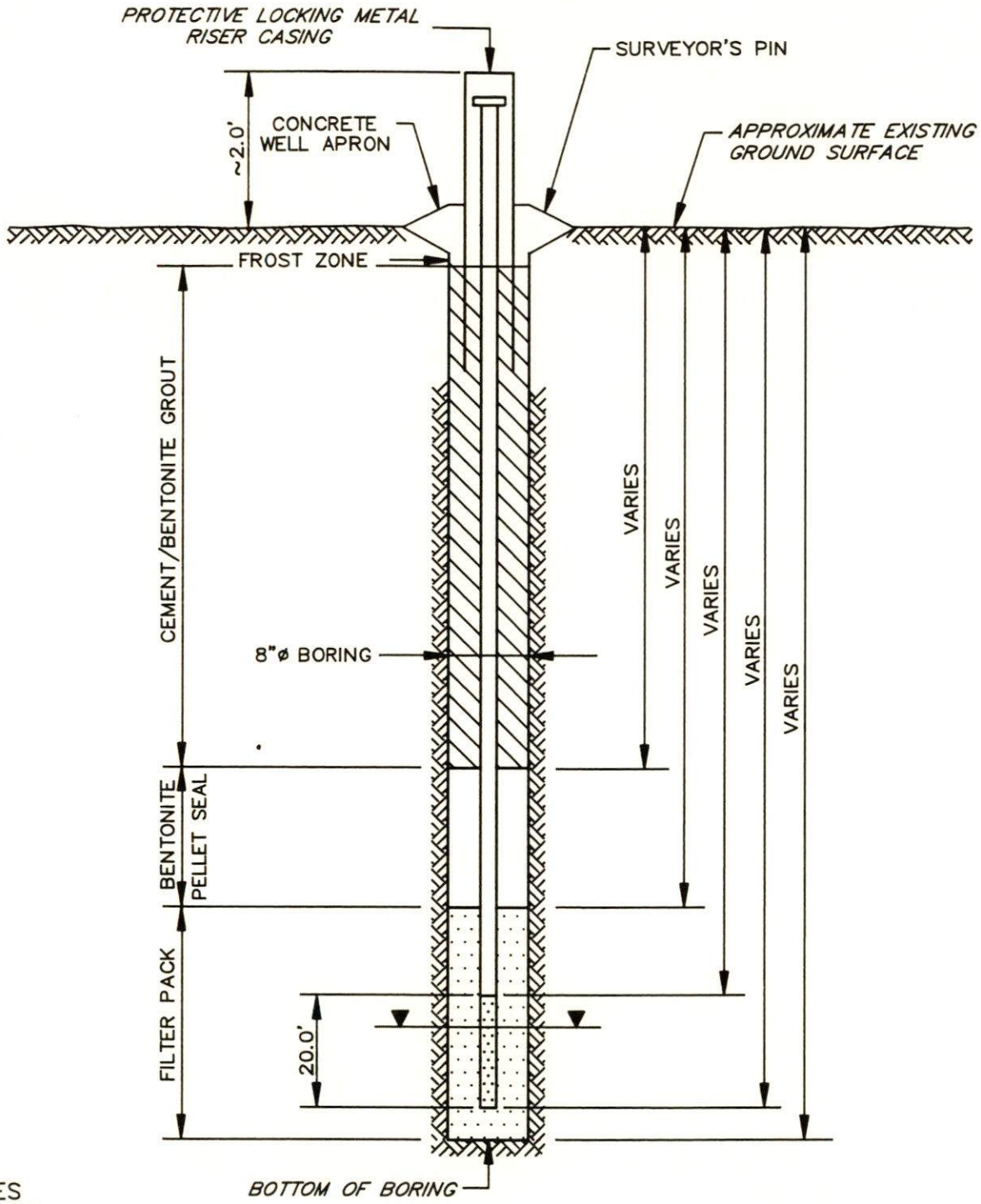
COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE- GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

DRAWN BY	mel	CH	D BY	JMB	5-9-89	DRAWING NUMBER	303409-A1
	6-18-87	APPROVED BY		JMB	5-9-89		



NOTES

1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN. I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. MINIMUM THICKNESS OF BENTONITE PLUG IS 2.0'.
5. FILTER PACK TO EXTEND 2 FEET OR LESS ABOVE TOP OF SCREEN
6. CONCRETE WELL APRON WILL EXTEND A MINIMUM OF 3 FEET AND WILL HAVE A MINIMUM THICKNESS OF 4"; CONCRETE WILL BE PLACED TO BELOW THE FROST LINE

FIGURE 5

TYPICAL INSTALLATION DETAILS
MONITORING WELL
NATRIUM CHEMICAL PLANT

PREPARED FOR

PPG INDUSTRIES, INC.
NEW MARTINSVILLE, WEST VIRGINIA

INTERNATIONAL TECHNOLOGY CORPORATION

"NOT TO SCALE"

65360

"Do Not Scale This Drawing"

DRAWN BY	CHECKED BY	DRAWING NUMBER
mel 6-26-87	APPROVED BY	303409-A3

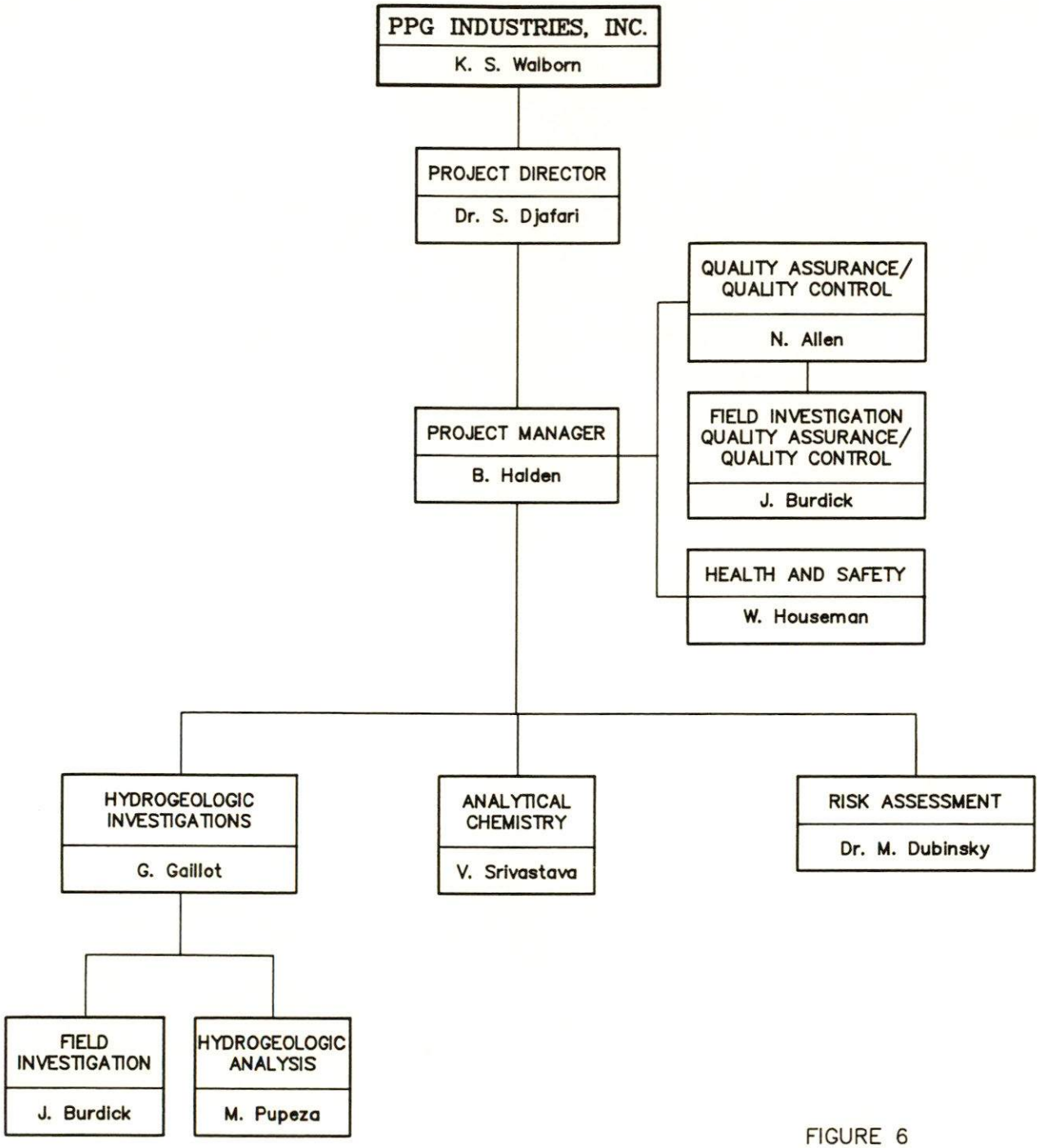


FIGURE 6

PROJECT ORGANIZATION

NATRIUM CHEMICAL PLANT
NEW MARTINSVILLE, WEST VIRGINIA

PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

INTERNATIONAL TECHNOLOGY CORPORATION

DRAWN BY	R. Weible 8-14-89	CHECKED BY	JMB	7-26-89	DRAWING NUMBER	303409-A6
		APPROVED BY	RCR	7-26-89		

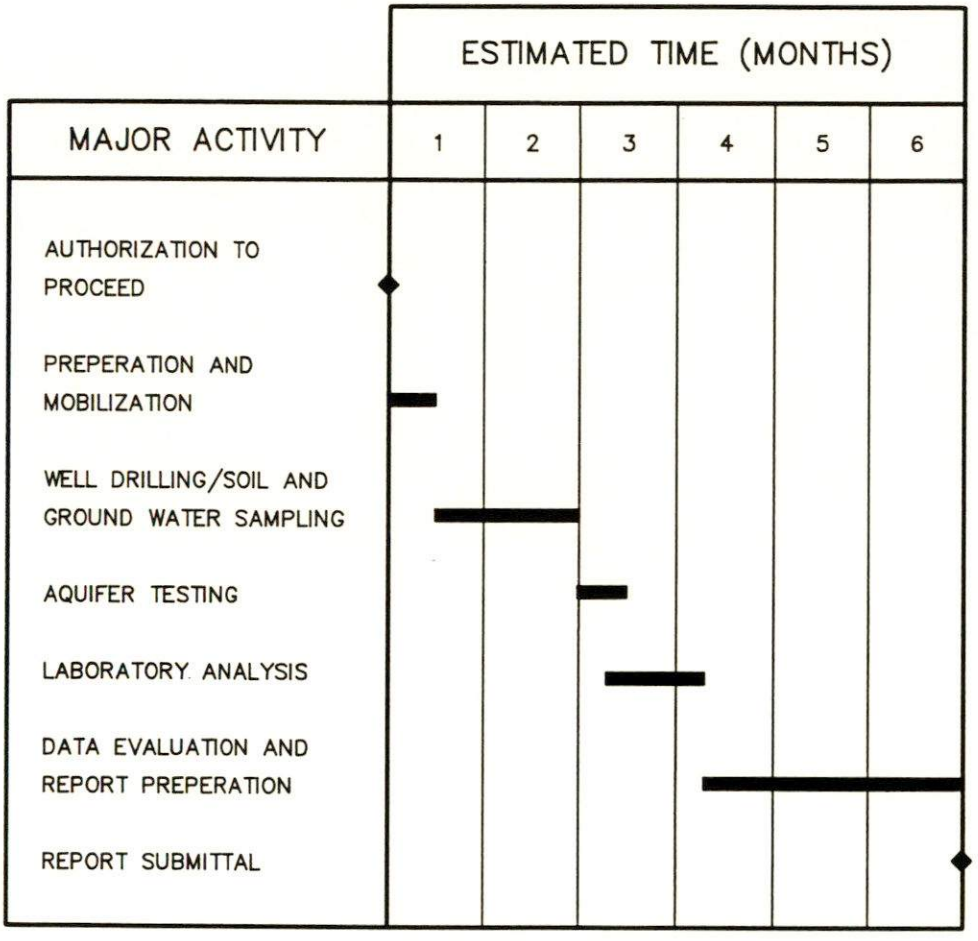


FIGURE 7

VERIFICATION INVESTIGATION
PROJECT SCHEDULE

NATRIUM CHEMICAL PLANT
NEW MARTINSVILLE, WEST VIRGINIA

PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

INTERNATIONAL TECHNOLOGY CORPORATION

132298